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EXAMINER	
MEHRPOUR, NAGHMEH	

ART UNIT	PAPER NUMBER
2686	7

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/621,407	Applicant(s) William Dominio
	Examiner Naghmeh Mehrpour	Art Unit 2686

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Aug 7, 2003*.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above, claim(s) ____ is/are withdrawn from consideration.

5) ☐ Claim(s) ____ is/are allowed.

6) ☒ Claim(s) *1-22* is/are rejected.

7) ☐ Claim(s) ____ is/are objected to.

8) ☐ Claims ____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on ____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). ____

4) ☐ Interview Summary (PTO-413) Paper No(s). ____

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1-8, 10-14, 19-22,** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nash et al (US Paten number 6,397,044 B1) in view of Na (US Patent Number 6,226,276 B1). Regarding **claims 1, 11,** Nash teaches a system for transmitting and receiving data comprising: a direct-conversion receiver receiving a signal modulated on a carrier frequency signal, the direct conversion receiver further comprising one or more subharmonic local oscillator mixers 21 (col 4 lines 20-24), a local oscillator 22 coupled to the direct conversion receiver (see figure 1, Rx VCO) , the local oscillator 22 generating a signal having a frequency equal to a subharmonic of the carrier frequency signal (col 4 lines 20-30), and a transmitter 30 coupled to the local oscillator 22 (see figure 1). In figure 1, Nash shows that the Oscillator is coupled to the mixers 21, and coupled to the transmitter 30 via Mixers 32 (col 4 lines 54-59). Nash fails to teach that the transmitter is coupled to a local oscillator **wherein the local oscillator is the transmitter**. However Na teaches a system for transmitting and receiving data comprising: a transmitter is coupled to a local oscillator **wherein the local oscillator 220 is the transmitter 231** (see figure **3, col 9 lines 40-59)**. Therefore, it would have been obvious to one of ordinary skill in the art at

the time of the invention to combine the above teaching of Na with Nash, in order to use different modulation method for reducing the interference and providing better performance.

Regarding **claims 2-3, 12-13**, Nash teaches a method wherein mixing 21 the carrier signal with the subharmonic local oscillator 22 signal to extract the baseband signal further comprises: mixing the carrier signal with the subharmonic local oscillator 22 signal to extract an in-phase signal, phase-shifting the subharmonic local oscillator signal, and mixing the carrier signal with the phase-shifted subharmonic local oscillator signal to extract a quadrature phase signal (col 1 lines 16-29, Rx I, Rx Q). Nash teaches a 90 deg splitter that shifting the phase of the received signals (see figure 1). Nash teaches a system for transmitting and receiving data comprising: a direct-conversion receiver receiving a signal modulated on a carrier frequency signal, the direct conversion receiver (see figure 1) further comprising one or more subharmonic local oscillator mixers 15 (col 4 lines 20-24), a local oscillator 18A coupled to the direct conversion receiver 15 (see figure 1, Rx VCO), the local oscillator 18 generating a signal having a frequency equal to a subharmonic of the carrier frequency signal (col 4 lines 20-30), and a transmitter 10A coupled to the local oscillator 18A, 18A (see figure 1). In figure 1, Nash shows that the Oscillator is coupled to the mixers 15, and Mixer 24 coupled to the transmitter 10A (col 4 lines 54-59).

Regarding **claims 2-3, 12-13**, Nash teaches a method wherein mixing 15 the carrier signal with the subharmonic local oscillator 18A signal to extract the baseband signal further comprises: mixing the carrier signal with the subharmonic local oscillator 22 signal to extract an in-phase

signal, phase-shifting the subharmonic local oscillator signal, and mixing the carrier signal with the phase-shifted subharmonic local oscillator signal to extract a quadrature phase signal (col 1 lines 16-29, Rx I, Rx Q). Nash teaches a 90 deg splitter that shifting the phase of the received signals (see figure 1).

Regarding **claims 4, 20,** Nash teaches a system for transmitting and receiving data comprising:

a low noise amplifier LNA receiving a modulated incoming carrier signal having a carrier signal frequency (see figure 1),

a local oscillator 22 generating a signal having a subharmonic frequency of the carrier signal (col 4 lines 19-30),

a first mixer 21a coupled to the low noise amplifier LNA and the local oscillator 22, the first mixer receiving the modulated incoming carrier signal and generating an in-phase incoming data signal (RX I, col 4 lines 20-30)

a second mixer 21b coupled to the low noise amplifier LNA and the local oscillator 22, the second mixer 21b receiving the modulated incoming carrier signal and generating a quadrature phase incoming data signal (RX Q, see figure 1),

a modulator 40 coupled to the local oscillator 22, the modulator receiving an outgoing data signal and modulating the outgoing data signal onto the local oscillator 22 signal to generate an outgoing modulated carrier signal (col 5 lines 40-55)

a transmit amplifier 35 coupled to the modulator 40, the

transmit amplifier amplifying the outgoing modulated carrier signal to a transmission power level (col 4 lines 41-53, col 5 lines 55-62).

Regarding **claims 5-6,** Nash teaches a system further comprising a frequency multiplier (PLL act as Multiplier) coupled between the local oscillator 31 and the transmitter (col 5 lines 20-40), wherein the frequency multiplier 33 increases the frequency of the oscillator to the frequency of the carrier signal fc (col 5 lines 40-61).

Regarding **claim 7,** Nash teaches system wherein the transmitter 10A comprises: a frequency multiplier coupled (phase locked loop 33 acts as a frequency multiplier 20 (col 5 lines 31-32) to the local oscillator, and an in-phase/quadraure modulator coupled to the frequency multiplier 33, receiving an In-phase modulation input (RxI) signal and a quadrature modulator input (RxQ) signal (see figure 1, baseband processor and controller) , and outputting a quadrature phase shift keyed signal modulated 26 at the multiplied local oscillator frequency 18A (col 5 lines 10-40).

Regarding **claim 8,** Nash teaches system wherein the transmitter the transmitter comprises: an in-phase/quadrature modulator coupled to the local oscillator 22, receiving an In-phase modulation (RxI) input signal and a Quadrature modulation (Rx Q)input signal, and outputting a quadrature phase shift keyed signal modulated 40 at the local oscillator frequency, 22 and a frequency multiplier 33 coupled to the in phase/quadrature modulator (Tx Modulation) and multiplying the frequency of the quadrature phase shift keyed signal fbb (col 5 lines 24-40).

Regarding **claim 19,** Nash teaches a method wherein modulating the outgoing data signal with the subharmonic local oscillator 22 signal comprises: modulating an outgoing in-phase data (Rx I) signal and an outgoing quadrature phase data (RxQ) signal with the subharmonic local oscillator 22 signal at a subharmonic modulation index to generate a modulated outgoing data signal, and multiplying the modulated outgoing data signal by an inverse subharmonic to generate the outgoing data signal (col 5 lines 20-35).

Regarding **claims 10, 14-15,** Nash teaches a system wherein the transmitter 30 comprises: a phase modulator 40 coupled to the local oscillator 22, where the local oscillator 22 is modulated by the modulator fbb, a voltage-controlled reference oscillator (vctxco) coupled to the phase modulator 40, where the voltage-controlled reference oscillator is modulated by the phase modulator 40, and a phase locked loop 33 coupled to the local oscillator 22 (through via mixer 32) in a feedback loop 33, the phase locked loop 33 further coupled to the voltage controlled oscillator 31 (col 4 lines 30-40). Nash does not disclose that a frequency modulator coupled to the local oscillator. However Nash system does modulates frequency, which is vary at the rate of the modulating wave from amplitude which is call phase modulation. Frequency Modulation is a common way of modulating frequencies and is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use above teaching to Nash, in order to use different modulation method for reducing the interference and providing better performance.

Regarding **claims 21-22,** the combination of Nash and Na does not specifically mention that the system comprising a telephone handset coupled to the first mixer, the second mixer, and the modulator, the telephone handset decoding an incoming data signal from in-phase data, and quadrature phase incoming data signal, and generating the outgoing data signal. However a communication system that comprising a telephone handset coupled to the first mixer, the second mixer, and the modulator, the telephone handset decoding an incoming data signal from in-phase data, and quadrature phase incoming data signal, and generating the outgoing data signal is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the above teaching with the combination of Nash and Na, in order to use different modulation method for reducing the interference and providing better performance.

3. **Claims 9, 16-18**, are rejected under 35 U.S.C. 103(a) as being unpatentable over Nash et al. (US Patent Number 6,397,044 B1) in view of Na (US Patent Number 6,226,276 B1) in further view of Bickley (US Patent Number 5,152,005).

Regarding **claims 9, 16**, Nash teaches a system wherein the transmitter comprises: a frequency modulator coupled to the local oscillator, wherein the local oscillator is modulated by the frequency modulator, a phase locked loop 33 coupled to the frequency modulator (modulation integrator) and the local oscillator 22. Nash system receives signal at a received frequency, and transmitter being operable to transmit at a transmission frequency, the transmitter frequency

being offset from and aligned to, the received frequency by a predetermined frequency spacing (col 2 lines 50-53). Nash teaches in figure 1 mixer 32 is provided to down convert the frequency of the signal output from the phase locked loop 33. It mixes signals at its two inputs to generate a signal having a different frequency. One of the input is connected tot he output of the phase locked loop 33 and the other is connected to the receiver local oscillator 22. The frequency 38 is used to switch the offset between the transmit and receive channels The modulator 40 modulates the baseband signal fbb onto the divided reference Fref/R. It is a coupled to the input of the PLL , that is, to one of the inputs of the phase comparator 36. The modulation process introduces a delay or advance of the edge of the divided reference signal Fref/R by an amount relative to amplitude of the modulated signal (col 5 lines 3-20). Na teaches a local oscillator that generates the constant local oscillation frequency f(LO1). The first local oscillation frequency f(LO1) is applied in common to the mixer 206 and 231, so that the transmitter and the receiver use the same local Oscillation frequency (col 9 lines 55-59) The combination of Nash and Na fails to specifically mention that a switch coupled between the local oscillator and the phase locked loop, wherein the switch can couple the phase locked loop to the local oscillator during a transmit cycle and can decouple the phase locked loop from the local oscillator during a receive cycle. But the combination of Nash and Na teaches a method that switches the transmitting and receiving cycle. However Bickley teaches a synthesizer that switch 55 coupled between PLL 250 and a local oscillator 31, wherein the switch 55 can couple the phase locked loop 250 to the local

oscillator 31 during a transmit cycle (see figures 1, 2 col 4 lines 4-11, col 8 lines 15-21) and can decouple the phase locked loop 250 from the local oscillator 31 during a receive cycle (see figures 1, 2, col 4 lines 67-68, col 5 lines 1-6). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the above teaching of Bickley with the combination of Nash and Na, in order to reduce the LO leakage from the receiver to the antenna, for the purpose of reducing interference.

Regarding **claims 17-18**, Nash teaches method further comprising opening a phase locked loop 33 during the transmit cycle to lock the subharmonic local oscillator 22 signal, phase modulating 40 a reference oscillator signal (vctxco) of a phase locked loop 33 that locks the subharmonic local oscillator signal (see figure 1, col 4 lines 20-40).

Response to Arguments

4. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. **Any responses to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314, (for formal communications indented for entry)

Or:

(703) 308-6306, (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II. 2121 Crystal Drive, Arlington. Va., sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Melody Mehrpour whose telephone number is (703) 308-7159. The examiner can normally be reached on Monday through Thursday (first week of bi-week) and Monday through Friday (second week of bi-week) from 6:30 a.m. to 5:00 p.m.

If attempt to reach the examiner are unsuccessful the examiner's supervisor, Marsha Banks-Harold be reached (703)305-4379.

NM

Nov 26, 2003

Marsha D Banks-Harold

MARSHA D. BANKS-HAROLD
SUPERVISORY PATENT EXAMINER
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